

WHAT IS CLAIMED IS:

1. A method for fabricating planar light waveguide circuits, wherein the circuit includes a substrate comprised of core and under-clad layers, an optical circuit, and a plurality of arrayed waveguides coupled thereon, the method comprising the steps of:
 - layering a hard layer on the core layer for forming a mask pattern of the planar light waveguide circuit thereon;
 - forming the mask pattern on the hard layer;
 - layering a photoresist layer on a branch section of the optical circuit and the arrayed waveguides of the mask pattern; and,
 - forming a vertical taper structure on the photoresist layer using a gray scale mask.
2. The method defined in claim 1, further comprising the step of:
 - etching the core layer using the photoresist layer having the vertical taper structure and the mask pattern.
3. The method defined in claim 1, wherein a tilt of the vertical taper structure is modulated by selectively adjusting the etching of the photoresist layer and the core layer.
- 20 4. The method defined in claim 1, wherein a tilt of the vertical taper structure is modulated by adjusting a light transmittance through the gray scale mask.

5. The method defined in claim 1, wherein the step of forming the mask pattern on the hard layer comprises the steps of:

applying a layer having a shape of the mask pattern on the upper surface of the hard layer; and

5 etching the layer having the shape of the mask pattern to form the optical-circuit pattern on the hard layer.

6. The method defined in claim 1, further comprising the step of removing any remaining photoresist layer that is not part of the mask pattern after forming the vertical
10 taper structure on the photoresist layer.

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